

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Porro, Massimo

(ii) TITLE OF INVENTION: VACCINES FOR PREVENTION OF GRAM-  
NEGATIVE BACTERIAL INFECTIONS AND ENDOTOXIN RELATED DISEASES

(iii) NUMBER OF SEQUENCES: 45

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Hedman, Gibson & Costigan  
(B) STREET: 1185 Avenue of the Americas  
(C) CITY: New York  
(D) STATE: New York  
(E) COUNTRY: USA  
(F) ZIP: 10036

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette, 3.50 inch, 1.44 Mb storage  
(B) COMPUTER: IBM PS/2  
(C) OPERATING SYSTEM: DOS  
(D) SOFTWARE: Word Perfect 5.1

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER:  
(B) FILING DATE: July 29, 1998  
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER:  
(B) FILING DATE:

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Costigan, James V.  
(B) REGISTRATION NUMBER: 25,669  
(C) REFERENCE/DOCKET NUMBER: 576-008

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (212) 302-8989  
(B) TELEFAX: (212) 302-8998

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

004420 08242150

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
1				5						10

(3) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
1				5						10
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				15						20
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				25						30

(4) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 434 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
1				5						10
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				15						20
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				25						30
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				35						40
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				45						50
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				55						60
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				65						70
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				75						80
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				85						90
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				95						100
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				105						110
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				115						120

004480 07298  
856240 08242160

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				125					130
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				135					140
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				145					150
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				155					160
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				165					170
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				175					180
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				185					190
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				195					200
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				205					210
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				215					220
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				225					230
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				235					240
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				245					250
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				255					260
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				265					270
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				275					280
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				285					290
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				295					300
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				305					310
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				315					320
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				325					330
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				335					340
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				345					350
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				355					360
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				365					370
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				375					380
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				385					390
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				395					400

Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				405						410
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				415						420
Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys
				425						430
Lys	Lys	Lys	Lys							

(5) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Lys	Asp	Lys	Asp	Lys	Asp	Lys	Asp	Lys	Asp
1				5					10

(6) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Lys	Phe	Lys	Phe	Lys	Phe	Lys	Phe	Lys	Phe
1				5					10

(7) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Lys	Phe	Leu	Lys	Lys	Thr	Leu
1				5		

(8) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:7:

004420 03242160



(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Lys Lys Lys Lys Lys Lys Phe Lys Phe Lys  
1 5 10

(14) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Cys Lys Cys Lys Cys Lys Cys Lys Cys Lys Cys  
1 5 10

(15) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Cys Lys Phe Lys Lys Cys  
1 5

(16) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Lys Phe Lys Cys Lys Phe Lys Phe Lys Cys  
1 5 10

(17) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid

(C) TOPOLOGY: circular

Lys Leu Lys Cys Lys Leu Lys Leu Lys Cys  
1 5 10

(18) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Arg Thr Arg Cys Arg Phe Lys Arg Arg Cys  
1 5 10

(19) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Lys Cys Lys Phe Lys Lys Phe Lys Cys Lys  
1 5 10

(20) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Cys Lys Lys Lys Lys Phe Phe Phe Phe Cys  
1 5 10

(21) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:20:





(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:25:

(31) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:30:

(32) INFORMATION FOR SEQ ID NO:31:

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:31:

(33) INFORMATION FOR SEQ ID NO:32:

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:32:

(34) INFORMATION FOR SEQ ID NO:33:

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:33:

(35) INFORMATION FOR SEQ ID NO:34:



(40) INFORMATION FOR SEQ ID NO:39

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Arg Tyr Val Arg Tyr Val Arg Tyr Val

(41) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Lys Phe Phe Lys Phe Phe Lys Phe Phe

(42) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Ile Lys Phe Leu Lys Phe Leu Lys Phe Leu

(43) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Lys Lys Lys Lys Lys Lys Phe Leu Phe Leu

(44) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Cys Lys Phe Lys Phe Lys Phe Lys Phe Cys  
1 5 10

(45) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Lys Trp Lys Ala Gln Lys Arg Phe Leu Lys

(46) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(C) TOPOLOGY: circular

(ii) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Lys Arg Leu Lys Trp Lys Tyr Lys Gly Lys Phe

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